

795

THIRD ANNUAL REPORT

OF THE

State Board of Education

OF THE

STATE OF MONTANA.

TO HIS EXCELLENCY:

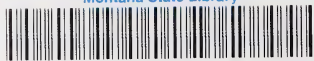
JOHN E. RICKARDS,

GOVERNOR OF MONTANA.

DECEMBER 1, 1895.

HELENA, MONTANA:
STATE PUBLISHING COMPANY,
STATE PRINTERS AND BINDERS
1896.

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THIRD ANNUAL REPORT.

OFFICE STATE BOARD OF EDUCATION,

HELENA, MONTANA, December 1, 1895.

TO HIS EXCELLENCY,

JOHN E. RICKARDS,

GOVERNOR OF MONTANA:

Sir:—In compliance with the provisions of the statutes, we have the honor to submit herewith a brief statement of the work of this Board for the year ending November 30, 1895.

During the year one change has been made in the membership of the Board Hon. A. H. Wethey, of Butte, was appointed to fill the vacancy caused by the resignation of Hon. John F. Forbis.

MEETINGS.

Under the present law governing the making of reports there have been held during the year nine meetings of the Board, as follows:

December 3, 1894; January 14th, 1895; March 20, 1895; May 1, 1895; June 3, 1895; July 17, 1895; August 28, 1895; October 27, 1895; November 4, 1895.

The business transacted at the meeting of the Board held December 3, 1894, was included in our report for last year, the law at that time requiring the Board to make a report January 1.

LIFE DIPLOMAS.

At a meeting of the Board held on June 3, 1895, life diplomas were granted to the following persons without examination:

Harmon, W. E., Bozeman.
Johnson, J. W., Bozeman.
Wylie, W. W., Bozeman.
Steere, E. A., Dillon.
Largent, S. D., Great Falls.
Sprague, Marion Grace, Great Falls.
Swan, Geo. B., Great Falls.
Avery, Clare L., Helena.
Bly, May, Helena.
Cram, Frances, Helena.
Cummins, M. S., Helena.
DeCamp, Emma C., Helena.
Fullerton, Ida E., Helena.
Harley, Mary E., Helena.
Magness, Emma F., Helena.
Templeton, J. C., Helena.
Turnley, C. L., Helena.
Williams, Ella D., Helena.
Woodruff, Anna M., Helena.
Young, R. G., Helena.
Bramble, G. T., Marysville.
Charles, C. M., Miles City.
Bolles, Mabel J., Missoula.
Hamilton, J. M., Missoula.
Pierce, Roena Austin, Missoula.

At a meeting of the Board held on July 17, 1895, life diplomas were granted to the following persons without examination:

Livingston, Mattie E., Anaconda.
Shoemaker, Martha E., Billings.
Skelton, L. Q., Boulder.
Baldwin, Sue, Butte.
Corbin, Fannie A., Butte.
Kern, F. L., Butte.
Knowlton, Leonard J., Butte.

Newill, A. C., Butte.
Wolfe, H. E., Deer Lodge.
Busenberg, E. O., Glendive.
Edgerton, Helen, Great Falls.
Gannon, John, Helena.
Howey, R. H. Helena.
Howey, Laura E., Helena.
Sanders, Sarepta, Helena.
Monical, F. S., Livingston.
Craig, Oscar J., Missoula.
Merritt, S. A., Missoula.
Johnston, L. F., Red Lodge.

At a meeting of the Board held on October 7th, 1895, life diplomas were granted to the following persons without examination.

Batchelor, Ione Reid Watson, Helena.
McBrine, Sarah A., Helena.
Robinson, Emma, Helena.
Parrent, J. M., Lewiston.
Miller, Georgia Cole, Livingston.

At a meeting of the Board held on July 17, 1895, institute instructor's certificates were granted to the following persons:

Livingston, Mattie E., Anaconda.
Howard, C. L., Billings.
Harmon, W. E., Bozeman.
Reid, James, Bozeman.
Kern, F. L., Butte.
Newill, A. C., Butte.
Wolfe, H. E., Deer Lodge.
Busenberg, E. O., Glendive.
Largent, S. D., Great Falls.
Magness, Frances, Helena.
Templeton, J. C., Helena.
Young, R. G., Helena.
Monical, F. S., Livingston.
Charles, C. M., Miles City.
Craig, Oscar J., Missoula.
Hamilton, J. M., Missoula.

Merritt, S. A., Missoula.
 McFarland, F. W., Sheridan.
 Birchard, C. W., Twin Bridges.

TEXT BOOKS.

At a meeting of the Board held on May 2, 1895, the following resolution was passed:

Whereas, The law of 1889, establishing a series of text-books expires July 1st, 1895, by reason of the adoption of the codes; and

Whereas, The contract entered into under and pursuant to the said law terminates by virtue of the terms and provisions thereof; and

Whereas, The last legislative assembly failed and neglected to adopt a series of text-books for our common schools; and

Whereas, The Board is in receipt of communication from many of the executive school officers and educators of the State praying that we recommend a series of text-books in order that uniformity may be preserved; therefore be it

Resolved, That this Board recommend a series of text-books for the common schools of this State and that a committee of five members be appointed by the President to select the same and report to this Board at its meeting June 3, 1895.

At a meeting of the Board held on June 3, 1895, the following list of text-books was selected and recommended for use in the public schools of Montana:

READERS.....	Stickney.
GEOGRAPHY.....	Frye.
HISTORY	Montgomery.
ARITHMETIC	Milne.
PHYSIOLOGY	Kellogg.
CIVIL GOVERNMENT.....	Peterman.
DICTIONARY	Webster.
SPELLER.....	Modern.
INTELLECTUAL ARITHMETIC	Stoddard.
LANGUAGE	Reed and Kellogg.

At the same meeting the Board issued the following address:

OFFICE OF STATE BOARD OF EDUCATION,

HELENA, MONTANA, June 10, 1895.

To Superintendents, Teachers, School Boards and Others Interested in Educational Matters:

In submitting the following list of text books which has been recommended by the State Board of Education for adoption in the Public Schools of Montana, we desire to give some reasons for our course in the matter and to show why existing conditions demanded some action on our part.

It is well known to you that Montana has had for some years past a uniform series of text books and we are persuaded that the prevailing sentiment is in favor of preserving uniformity as far as possible throughout the State.

The reasons which might be given are so evident that it would be unnecessary had we the time to enumerate them.

The present arrangement ends July 1, 1895, and the last legislature failed to adopt or legalize any series of text books whatever, while the passage of the new code rendered null and void all laws and the contract hitherto existing, thus leaving every school district free to choose any series the school officers may see fit to adopt.

The new school law which comes into force July 1, 1895, enacts that the State Board of Education shall recommend to the legislature a uniform series of text books for all grades below the High School.

At a meeting held in the month of March, the question of making some recommendation was brought up, but after some discussion, the sentiment seemed to be against such action at that time, and the matter was deferred.

A large number of letters of inquiry from county superintendents and others urging that something should be done to prevent the chaos that must ensue caused the State Superintendent to send out a circular letter on April 24th, to school

officers and members of the State legislature asking their views on the subject. Replies were received from thirty-one members of the legislature and senate, fifteen from county superintendents and fifteen or more from principals throughout the State not only favoring, but many of them urging such action. Feeling that they would be supported by public sentiment, the State Board proceeded at a meeting held on May 1st, to appoint a committee with power to recommend a series of text books, and submit their report at the June meeting of the Board.

The State Board, in the action taken, has considered the best interests of the State at large, and while the members have been influenced in some degree by personal inspection and examination as to the merits of the text books chosen, yet in all cases of doubt, they have been controlled by the views of educators throughout the State who have been consulted very generally as to their preferences.

The series now recommended for adoption until the meeting of the next legislature will also be recommended by the Board to said legislature for adoption by it at its session in 1897.

In regard to the expense of making the changes we recommend, we are assured that the State will not lose anything, but will rather be the gainer.

The series is as follows with prices attached. These prices are taken from propositions received from the various publishing houses. By preserving this circular and observing carefully any departure from this schedule of prices and reporting promptly to the State Superintendent, the difficulty can be remedied.

GINN & COMPANY, PUBLISHERS.

	Exchange Price	Introductory Price	Wholesale at Chicago F. O. B.	Mailing Price
First Reader, Stickney's.....	10 cents	15 cents	19 cents	24 cents
Second Reader, Stickney's.....	12 "	20 "	26 "	32 "
Third Reader, Stickney's.....	16 "	25 "	32 "	40 "
Fourth Reader, Stickney's.....	20 "	30 "	40 "	50 "
Fifth Reader, Stickney's.....	24 "	36 "	48 "	60 "
Frye's Primary Geography.....	24 "	36 "	48 "	60 "
Frye's Advanced Geography.....	50 "	80 "	1 05 "	1 35 "
Montgomery's Beginner's American History.....	24 "	36 "	48 "	60 "
Montgomery's Leading Facts, American History.....	40 "	60 "	80 "	1 00

AMERICAN BOOK COMPANY, PUBLISHERS.

	Exchange Price	Introductory Price	Wholesale at Chicago F. O. B.	Mailing Price
Webster's Dictionaries—				
New Primary		48 cents		
New Common School		72 “		
High School		98 “		
Academic		1 50 “		
Condensed		1 44 “		
Milne's Elements of Arithmetic	23 cents	30 “	24 cents	30 cents
Milne's Standard Arithmetic	49 “	65 “	52 “	65 “
Kellogg's First Book of Physiology and Hygiene	30 “	40 “	32 “	40 “
Kellogg's Second Book in Physiology and Hygiene	60 “	80 “	64 “	80 “
Peterman's Elements of Civil Government	48 “	60 “	48 “	60 “

SHELDON & COMPANY, PUBLISHERS.

	Exchange Price	Introductory Price	Wholesale at Chicago F. O. B.	Mailing Price
Modern Speller, Hunt's	10 cents	20 cents	15 cents	20 cents
Intellectual Arithmetic, Stoddard's	20 “	35 “	28 “	35 “

MAYNARD MERRILL & COMPANY, PUBLISHERS.

	Exchange Price	Introductory Price	Net Contract Price	Retail Price
Reed's Introductory Language Work.....	25 cents	40 cents	32 cents	40 cents
Reed & Kellogg's One Book Course in Eng- lish	30 “	60 “	50 “	63 “

It is well understood by the Board that its recommendations have not the force of an adoption, but it is earnestly hoped and expected that teachers and school officers will act in accordance with their petitions to the Board and by so doing make the work of the State Board effective and thus preserve uniformity in the State.

The following resolution was adopted by the State Board of Education:

Whereas, The law of 1889 establishing a series of text books expires July 1, 1895, by reason of the adoption of the codes; and

Whereas, The contract entered into pursuant to the said law terminates by virtue of the terms and provisions thereof; and

Whereas, By the last legislative assembly, by an act entitled "An Act to amend Chapters one and six of the Political Code relating to public schools," approved March 11, 1895, this board was authorized to recommend to the legislature a uniform system of text books to be used in the public schools of the State of Montana; therefore be it

Resolved, That this board recommends that the foregoing list of text books be adopted by the school officers of this state, and that this board will, in pursuance of the authority delegated to it by said act of the legislature, at its next regular meeting, recommend said system of text books to the next legislative assembly.

By authority of the State Board of Education

J. E. RICKARDS, Governor,
President.

E. A. STEERE, Sup't Pub. Instruction,
Secretary.

STATE AND LIFE DIPLOMAS.

At its meeting May 2, 1895, the Board adopted the following resolutions concerning state and life diplomas.

REGULATIONS OF BOARD OF EDUCATION, CONCERN- ING STATE AND LIFE DIPLOMAS.

ADOPTED MAY 2D, 1895.

These diplomas are good in any county in Montana, subject to the conditions hereinafter enumerated. They are intended as a recognition of professional standing attained by long and successful experience.

It is the presumption that those who hold these diplomas have entered upon teaching as a life work and are devoting all their energies to the practice of their profession.

With a view to answering as fully and as satisfactorily as possible all questions likely to arise, and to give such general information as may be of interest to the teachers of the State, the Board of Education has adopted the following rules and regulations:

GENERAL QUALIFICATIONS.

No person shall be eligible to examination for a State or Life diploma except such as have a good moral character and have held for one year and still hold in full force and effect a first grade county certificate. Said applicant for State or Life diplomas shall file an affidavit that no charges for gross or immoral conduct have been preferred and substantiated. The applicant for a State diploma must have been successfully engaged in teaching thirty-five months of which at least twenty-one months must have been in the public schools of Montana. The applicant for a Life diploma must have had at least seventy months successful experience in teaching of which at least twenty-one months must have been in the State of Montana.

Note—See 933A and 933B, Title 3, Chap. I. of the Political Code.

PROFESSIONAL REQUIREMENTS.

All applicants for State or Life diplomas will be required to pass a satisfactory examination in Theory and Practice of Teaching, School Laws of Montana, and Mental Science.

ACADEMICAL REQUIREMENTS.

Applicants for State diplomas will be required to pass satisfactory examinations in the several branches of the following groups:

Group 1, Mathematics.....	Arithmetic, Elementary Algebra through quadratics Plane Geometry.
Group 2, Language.	Reading. Writing. Grammar.
Group 3, Science	Political and Phys. Geography. Physiology. Physics.

TIME AND PLACE OF HOLDING EXAMINATIONS.

Public examinations shall be held in June and December of each year. The December examination shall be held at the time and place of the meeting of the State Teacher's Association, the June examination at such time and place as the State Board shall designate.

GRADUATES OF STATE INSTITUTIONS.

A State or Life diploma may be granted to any graduate of any State Institution of Montana when the said graduate furnishes satisfactory evidence of having successfully taught, after graduation, a public school in the State sixteen school months.

Diplomas may also be granted to graduates of Educational Institutions within or without the State. Applicants from such institutions may at the discretion of the Board be required to pass an examination in Theory and Practice of Teaching and, in one subject selected for him from any or each of groups 5, 6, 7 and 8. Such applicants may also be required to write a thesis of not less than two thousand nor more than four thousand words on some professional topic selected by the Board.

Such applicant shall furnish evidence of having taught thirty-five months of which seven months must have been in the State of Montana.

The possession of a Life diploma from any other State may, at the discretion of the Board, be accepted in lieu of the examination in the academic studies. Such applicant, however, must comply with the other conditions laid down for graduates of institutions from other States.

GENERAL REQUIREMENTS.

It is required that the candidates send for a registration blank, fill it out carefully and return it to the Chairman of the Committee on Diplomas, at least ten days before the date named for examination.

The following requirements as to testimonials and credentials are imperative:

(a) Written statements from one or more county superintendents or other experienced educators, certifying to the professional success and good moral character of the applicant. When possible one of these should be the superintendent of the county in which the candidate is now teaching or the superintendent who gave the last certificate under which he taught.

(b) Written official statements from school boards, or directors, for whom the candidate has taught, certifying to his success in teaching and government.

(c) All testimonials as to the character and experience, filed as proofs according to (a) and (b) of this section of the circular, must be expressly prepared for and addressed to the Board and become the property of the Board.

(d) At the time of registration the names of three disinterested persons of liberal education shall be given as references. The Board holds the right to apply to others for information if these are not entirely satisfactory.

The holder of a State or a Life diploma must register it in a book kept for the purpose with the County Superintendent in the county in which he intends to teach, and will bear in mind that the possession of such credentials will not in any sense lessen his duty to comply fully and promptly with all the rules and requirements of the county superintendent of the county in which he may teach.

J. E. RICKARDS, Governor, President.
H. J. HASKELL, Attorney General.
E. A. STEERE, Sup't Pub. Inst., Sec'y.
R. G. YOUNG,
O. F. GODDARD,
JAMES REID,
JOHN F. FORBIS,
J. E. MORSE,
T. E. COLLINS,
J. M. HAMILTON,
H. H. GRANT,

State Board of Education.

CAMERON C. WYLIE,

Clerk of the Board.

Under exhibits "A" and "B" appear the reports of the President of the State University and the Executive Board of the State Agricultural College, respectively. These reports show a most gratifying condition of the leading educational institutions of the State.

No report has been received from the Board of Trustees of the Deaf and Dumb Asylum.

Contracts for the erection and completion of the buildings of the Agricultural College, Normal School and Deaf and Dumb Asylum have been let and foundation work has commenced on the first two named. The work is to be prosecuted with vigor at the opening of the spring season, and it is believed before snow falls next year the buildings will be completed and ready for occupancy.

J. E. RICKARDS, President.

H. J. HASKELL,

E. A. STEERE, Secretary.

R. G. YOUNG,

O. F. GODDARD,

JAMES REID,

A. H. WETHEY,

J. E. MORSE,

T. E. COLLINS,

J. M. HAMILTON,

H. H. GRANT.

CAMERON C. WYLIE,

Clerk of the Board.

UNIVERSITY OF MONTANA

PRESIDENT'S REPORT.

FOR THE FIVE MONTHS ENDING NOVEMBER 30, 1895.

THE MONTANA STATE BOARD OF EDUCATION.

EX-OFFICIO.

GOVERNOR J. E. RICKARDS, President.

H. J. HASKELL, Attorney General.

E. A. STEERE, Supt. Public Instruction, Secretary.

APPOINTED.

R. G. YOUNG, Helena.....	Term Expires	February 1st,	1899	
O. F. GODDARD, Billings.....	"	"	"	1899
JAMES REID, Bozeman.....	"	"	"	1896
A. H. WETHEY, Butte.....	"	"	"	1896
J. E. MORSE, Dillon.....	"	"	"	1897
T. E. COLLINS, Great Falls.....	"	"	"	1897
J. M. HAMILTON, Missoula.....	"	"	"	1898
H. H. GRANT, Grantsdale.....	"	"	"	1898
CAMERON C. WYLIE, Helena.....	Clerk of the Board			

EXECUTIVE COMMITTEE OF THE STATE UNIVERSITY.

J. H. T. RYMAN, President.....	Missoula
T. C. MARSHALL.....	Missoula
HIRAM KNOWLES.....	Missoula

THE FACULTY.

OSCAR J. CRAIG, A. M. Ph. D. PRESIDENT.

Professor of History and Literature.

S. A. MERRITT, B. S.

Professor of Natural Science.

MISS CYNTHIA ELIZABETH REILEY, B. S.

Professor of Mathematics.

W. M. ABER, A. B.

Professor of Latin and Greek.

FRED C. SCHEUCH, B. M. E., A. C.

*Professor of Modern Languages and Temporarily in charge of the
Department of Applied Science.*

MARY OLIVE GRAY,

Instructor in Music.

MARY A. CRAIG,

Librarian.

PRESIDENT'S REPORT.

UNIVERSITY OF MONTANA,
MISSOULA, MONTANA, Nov. 30, 1895.

*To the State Board of Education,
Helena, Montana:*

Gentlemen:—In accordance with Section 5 of the “Act to establish, locate, maintain and govern the University of the State of Montana,” the following report for the year ending November 30, 1895, is respectfully submitted.

On July 5, 1895, five days after my term of service began a preliminary circular was issued in which the general plan of the organization of the University and of its work was given to the public.

The following extracts from this circular relate to Buildings and Grounds, Courses of Study, Preparatory Department, and Tuition, Fees and School Terms.

“BUILDINGS AND GROUNDS.”

“A commodious and well-arranged building is being fitted up for university purposes and will be ready for occupancy before the beginning of the college year. This building will contain lecture rooms, laboratories, library and reading room, and assembly room.”

“The building is heated by steam and will be lighted throughout by electricity. It is located on the south side of the Missoula river and is easily reached, as there are good sidewalks extending to the university and the street cars pass within two squares of the grounds.”

"COURSES OF STUDY."

"Courses of study will be arranged in Ancient and Modern Languages, History, Philosophy and Literature, Mathematics, Chemistry, Physics, Biology and some of the Applied Sciences."

"PREPARATORY DEPARTMENT."

"A two years course of preparatory work will be provided. This work will be so arranged that it will not only furnish the necessary preparation for the Freshman class of the University, but will also give a course of instruction adapted to the needs of those who wish to prepare themselves for teaching. A special announcement containing course of study will be issued soon."

"TUITION, FEES, AND SCHOOL SEMESTERS."

"By legislative enactment tuition is free to all students who have been residents of the State of Montana for one year next preceding their admission to the University, except in certain departments not yet established and for extra studies."

"A matriculation fee of ten dollars will be charged and is payable one-half in advance at the beginning of each semester."

"The year will be divided into two semesters of nineteen weeks each. The first semester will begin September 11, 1895, and the second February 3d, 1896. The Christmas holidays will be from December 21, 1895, to January 6th, 1896, inclusive."

The first of August a more complete announcement was sent out containing the Course of Study, the Plan of Work, a description of Laboratory Facilities and some other items of interest.

The Course of Study as printed in the announcement has been put in operation and is as follows:

COLLEGIATE COURSES OF STUDY.

Beginning with the college year of 1895-6, the University will offer the following courses of instruction:—

A.—A Classical course, leading to the Degree of A. B.

B.—A Philosophical course, leading to the Degree of B. Ph.

C.—A General Science course, leading to the Degree of B. S.

D.—A Course in Applied Science which will ultimately be developed into different courses, leading to their respective degrees in the Industrial Arts.

The work of the year will be divided into two equal Semesters. For convenience in classification, the work of each department of study will be divided into courses and fractional courses. One course shall mean the equivalent of one hour's lecture or recitation five times a week for one semester. Two hours of laboratory work will count the same as one of lecture or of recitation. In the absence of any definite statement, the Faculty reserves the right to prescribe the order in which the different courses as here defined are required for graduation in any of the departments of the University.

ADMISSION TO COLLEGIATE DEPARTMENTS.

Candidates for admission to any of the collegiate Departments of the University must be at least sixteen years old and present satisfactory evidence of good moral character.

Those who have been members of other Colleges and Universities must bring certificates of honorable dismissal.

For admission to the Classical Course, leading to the degree of A. B., the applicant must present the equivalent of the following courses found in the Preparatory Department. (See page —.)

Mathematics—Courses 1, 2, 3 and 4.

Latin—Courses 1, 2, 3 and 4.

Greek—Courses 1 and 2.

English—Courses 1, 2, 3 and 4.

Science—Courses 1, 2, 3 and 4.

History and Civics—Courses 1 and 2.

For admission to the Philosophical Course, leading to the degree of B. Ph., there is the same requirements as for the Classical Course except that courses 1 and 2 in German are taken in the place of Greek.

For admission to the General Science course, leading to the degree of B. S., the following courses or their equivalents are required.

Mathematics—Courses 1, 2, 3 and 4.

Latin—Courses 1, 2, 3 and 4.

English—Courses 1, 2, 3 and 4.

Science—Courses 1, 2, 3 and 4 with additional laboratory work in Physics.

Drawing—Courses 1 and 2.

History and Civics—Courses 1 and 2.

For admission to the course in Applied Science.

Mathematics—Courses 1, 2, 3 and 4.

English—Courses 1, 2, 3 and 4.

History and Civics—Courses 1 and 2.

Drawing—Courses 1 and 2.

COLLEGIATE DEPARTMENTS OF INSTRUCTION.

COURSES OF STUDY IN THE DEPARTMENT OF HISTORY, LITERATURE, AND PHILOSOPHY.

HISTORY.

(3 times per week.)

1. Ancient and Mediaeval History.
2. Modern European History.
3. The History of England and the English Constitution.
4. American History with especial reference to the development of Political, Social, and Industrial Institutions.

LITERATURE.

(3 times per week.)

1. Rhetoric—Exercises in Writing, Criticism of Themes.
2. Rhetoric—Lectures and Recitations. Theme writing and criticism continued as in course 1.
3. English Literature—Lectures, Readings from representative Authors. Text-book: Minto's Manual of English Prose.
4. Theme study of some typical selections from Chaucer, Shakespeare, Browning, and Emerson.

PHILOSOPHY.

(3 times per week.)

1. The Elements of Psychology—Especially prominence will be given to the practical phases of the subject as relates to Mind culture.
2. Ethics—Lectures and Recitations. An attempt will be made to apply the scientific method to the investigation of the right in human conduct and individual relation.

POLITICAL ECONOMY.

(3 times per week.)

1. The Elements of Political Economy—The subject will be treated from the historical standpoint.

COURSES IN SCIENCE.

PHYSICS.

(1st Semester)

1. General Lectures—Mechanics, Heat, Electricity, Magnetism, Acoustics, and Optics. Recitations and Laboratory Work.

1. Continuation of Course 1.

These two courses will be required of all students in the University Department. The work in Physics of the Preparatory Department will be similar to the above courses, but more elementary.

3. A Course in Laboratory Practice—The Theory and Methods of Physical Measurements. Must be preceded by Course 1. The equivalent of Stewart & Gee, Vol. 1.

4. Electricity and Magnetism—Measurements and Application to the Industries. Continued during 2d Semester as an elective.

5. Mathematical Physics—Fundamental Equations of Theoretical Physics. Mathematical theory of sound, light, and electricity.

Courses 3, 4 and 5 may be elected by students in the general science course in place of equivalent work in the biological sciences.

Courses 1 to 4 inclusive, are required of students in the course of Applied Science.

CHEMISTRY.

Course 1.—Descriptive Inorganic Chemistry; Lectures, Text Book and Laboratory Work. (Required as a preparatory study for students in the Applied Science course.)

Course 2.—Qual. Analysis, Lectures on Elementary Organic Chemistry with Laboratory Work.

Course 1 and 2 will be required of all students in the college department.

Course 3.—Advanced Inorganic Chemistry, Preparation of Commercial Compounds, etc., Organic Chemistry, Preparation and Study of Organic Compounds. Must be preceded by courses 1 and 2.

4.—Quantitative Analysis—Volumetric and Gravimetric and applications to the analysis of ores, crude metals, slags and technical products.

5. Course 4 continued to include blowpipe analysis and assaying. Must be preceded by Courses 1 and 2.

Courses 3, 4 and 5 may be elected by students in the General Science course in place of equivalent biological work.

MINERALOGY.

1. Lectures and Recitations—Characteristics of the different minerals, determinative mineralogy, the application of chemical tests, of blowpipe analysis, laboratory work, required of students in the General Science course and elective in place of equivalent technical work in the Applied Science course.

GEOLOGY.

Course 1. Physiographic, Lithological, and Dynamical Geology—Lectures and recitations, identification of rocks.

2. Historical Geology—The succession of the rocks of the globe, the records they contain as to the successive conditions of the earth, the changes in its oceans, continents, climate, life. Must be preceded by a course in Botany and Zoology.

3. Economic Geology—A consideration of the topics usually classified under this subject.

BIOLOGY.

1. General Biology—Introductory to Botany, Zoology, and advanced Physiology. Lectures and laboratory work. Required as a preliminary to all advanced work in this department.

2. Course in Botany, should be preceded by course in General Biology—Anatomy and histology of plants, the elements of vegetable physiology, and the principles of morphology and classification. Special attention to the flora of the region.

3. Physiology—Must be preceded by Courses 1 and 2 in Physics and by course in General Chemistry.

4. Animal Histology—Open to those taking Course 3.

5. Zoology, Invertebrate—A general course in the morphology and classification of invertebrates. For illustrative material in this department the University has secured a collection of sea Invertebrates from the National Museum.

6. Vertebrate Zoology—Accompanied by dissections of typical vertebrates Invertebrate Zoology will also be taught by dissections and laboratory work so far as material can be had.

THE DEPARTMENT OF MATHEMATICS.

THE FOLLOWING COURSES HAVE BEEN PROVIDED.

1. A course in Plane Geometry.
First Semester 5 times per week.
2. Solid and Spherical Geometry.
Second Semester 5 times per week.
3. Plane and Spherical Trigonometry.
First Semester 5 times per week.
4. Higher Algebra.
See Page —
5. Analytical Geometry.
6. Differential and Integral Calculus.

Students in all courses will take 1, 2, 3 and 4. Courses 5 and 6 are optional except to those taking the course in Applied Science, in which case both are required subjects.

THE DEPARTMENT OF LATIN AND GREEK.

GENERAL INFORMATION:

1. In Latin the Roman pronunciation will be used.
2. The writing of Latin and Greek will be practiced throughout Course 1, 2, 3 and 4.
3. There will be almost daily practice in reading and translating at sight.

COURSES IN LATIN.

1. VERGIL'S AENEID—First three books, elements of prosody.
4 periods.
2. VERGIL'S AENEID—Books IV., V., and VI.
4 periods.
3. HORACE—First half, selected odes.
4 periods.
CICERO—Second half, one essay, one or two orations, selected letters.
4 periods.
4. LIVY AND TACITUS—Selections.
4 periods.

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5. HORACE—First half, selected Satires and Epistles.
4 periods.
PLAUTUS AND TERENCE—Second half, one play from each.
4 periods.
 6. Private Life of the Romans. Descriptive, no knowledge of Latin required for this course.
3 periods.
 7. Rapid Reading Course, Catullus, Horace, Pliny's Letters.
 8. Rapid Reading Course in Latin Dramatic Literature.
-

COURSES IN GREEK.

1. XENOPHON'S ANABASIS—Three books.
4 periods.
 2. HOMER'S ILIAD—Two books.
4 periods.
 3. HOMER CONTINUED—Selections from the Iliad and the Odyssey.
4 periods.
 4. GREEK HISTORIANS—Fernald's Selections or a similar work.
4 periods.
 5. PLATO—Selections.
4 periods.
 6. GREEK DRAMATISTS—One play each from Aeschylus, Sophocles, and Euripides, selections from Aristophanes.
4 periods.
 7. Private Life of the Greeks. Descriptive, no knowledge of Greek required for this course.
3 periods.
 8. Demosthenes' Orations.
-

DEPARTMENT OF MODERN LANGUAGES.

GERMAN.

Two years work has been arranged in German. The first year is devoted to the study of grammar.

Course 1 and 2 (19 weeks each 5 hours a week.) Joyne's-Meissner, German Grammar, Joyne's-German Reader.

In the second year, a select course of reading is followed with exercises in composition and conversation.

Course 3 and 4 (19 weeks each 5 hours a week.)

Reading, composition, and conversation.

SELECTION OF CLASSICS—Harris' German Composition, White's German Prose, Goethe's "Iphigenia," "Hermann und Dorothea," "Maria Stuart," "Wilhelm Tell," or "Die Jungfrau von Orleans.

SELECTION OF MODERN PROSE—"Aus dem Staate Friedrichs des Grossen." "Jensen Die Braune Erica." "Undine."

FRENCH.

Two years are given to the study of French. The first year is devoted to a study of grammar.

Courses 1 and 2 (19 weeks each, 5 hours a week.)

GRAMMAR AND READERS.—Edgreen's Grammar, Histoires Nouvelles, Super's Reader, Souvestre's "Confessions d'un Ouvrier," Sandeau's "Made-moiselle de Seigliere."

In the 2d year, the course consists of readings and translations of various selections from classical and modern writers with a study of syntax, idioms, etc., and with exercises in composition and conversation. Essays in French are required.

Courses 3 and 4 (19 weeks each, 5 hours a week.)

THE DEPARTMENT OF APPLIED SCIENCE.

CHEMISTRY.

Courses I, II, III, IV, V. But students may elect equivalent work in other departments of Applied Science in place of courses III, IV, and V.

PHYSICS.

Courses I, II, III, IV. Course V. elective, but necessary for some courses in Applied Science.

MINERALOGY I.

Geology. Courses I, II. Course III. will be required of some students, depending upon selection made in other courses.

DESCRIPTIVE GEOMETRY.

1. Nineteen weeks, 2 hours per week.

Methods of representing geometrical magnitudes by drawing.

ANALYTICAL GEOMETRY.

1. Nineteen weeks, 3 hours per week.

Text: Wentworth's Analytical Geometry.

PLANE SURVEYING.

1. Nineteen weeks, 2 hours per week.

SHOP WORK.

Technical Instruction—Four courses, 19 weeks 5 hours a week. Course 1.

(a.) Recitations on the cutting edges of wood; the care and adjustment of wood working tools; the shrinkage and warping of woods; the form, adaptation, and strength of joints.

Goss' Bench Work in Wood.

(b.) Lectures on wood working machines and pattern making, molding and casting.

Course 2.

Exercises in planing, sawing, splicing, dove-tailing, and other work involving the use of carpenter tools.

MECHANICAL DRAWING.

Four courses, 19 weeks, 5 hours a week.

Course 1 and 2.—

- (a.) Drawings from copy of the details of machines.
- (b.) Drawing for built-up pulley patterns, pipe bends, etc.
- (c.) Free hand drawings with dimensions of details of machines.
- (d.) Lettering.

Courses 3 and 4.

- (a.) Drawings from scale from parts of actual machines.
- (b.) Ink shading and tinting. The representation of flat and curved surfaces by ink tints and of engineering materials by colors.

GRADUATION AND DEGREES.

While it is hardly expected that all of the work offered will be called for in the current year of 1895-6, still the amount of work required for graduation in the different courses is stated in order to present the plan of organization.

In order to secure the recommendation of the faculty for graduation from the University in any of the respective lines of work that have been outlined, it will be necessary that the

student complete the equivalent of twenty-six full courses as already defined in the section concerning collegiate courses.

That the needs and special inclinations of the different students may be consulted as far as possible, certain of these courses are required for each of the respective degrees and the rest are left for the students' selection.

The following is a statement of the amount of required work for the different degrees and the number of elective courses allowed.

FOR THE DEGREE OF A. B.

In Latin, 1, 2, 3, 4, 5, 6.	4	3-5	full courses
" Greek, 1, 2, 3, 4, 5, 6, 7	5	2-5	" "
" Mathematics, 1, 2, 3, 4.	4	"	"
" History, 1, 2	1	1-5	" "
" English and Literature, 1, 2, 3, 4.	2	2-5	" "
" Political Economy, 1.	3	3-5	" "
" Psychology and Ethics, 1, 2.	1	"	"
" Physics, 1, 2.	1	1-5	" "
" Chemistry, 1.	4	4-5	" "
Electives.	4	4-5	" "
Total.	26	"	"

FOR THE DEGREE OF B. PH.

In Latin, 1, 2, 3, 6.	3	full courses
" Greek, 7, Descriptive course.	3-5	" "
" German, 3, 4.	2	" "
" History, 1, 2	1	1-5
" Literature, 1, 2, 3, 4	2	2-5
" Political Economy, 1	3	3-5
" Psychology and Ethics	1	" "
" Physics, 1, 2.	1	1-5
" Chemistry, 1	4	4-5
" Biology, 1, 2.	2	" "
" Mathematics, 1, 2, 3, 4.	4	" "
Electives.	7	1-5
Total.	26	" "

 FOR THE DEGREE OF B. S.

In Latin, 1, 2	1	3-5	full courses
" Mathematics, 1, 2, 3, 4	4	"	"
" German, 1, 2, 3, 4	4	"	"
" History, 1, 2	1	1-5	"
" Literature, 1, 2, 3, 4	2	2-5	"
" Political Economy, 1	3-5	"	"
" Psychology and Ethics, 1 and 2	1	"	"
" Chemistry, 1, 2	1	3-5	"
" Physics, 1, 2	1	1-5	"
" Biology, 1, 2	2	"	"
" Geology, 1	1	"	"
" Mineralogy	3-5	"	"
Electives	4	4-5	"
Total	26	"	"

In the Course in Applied Science no degrees have been arranged, for the reason that the equipment of this Department is not yet complete, and full lines of work can not be given at present.

 THE PREPARATORY DEPARTMENT.

It is supposed that the average student will complete the work of the Preparatory Department in two years, if due diligence is employed. The arrangement of semesters and courses is just the same as in the college, except that there are no electives. Each collegiate course has its appropriate preparatory work.

 COURSES OF INSTRUCTION.

 MATHEMATICS.

5 periods a week.

1. Arithmetic. With special attention to Fractions, Percentage, Proportion and the Metric System of Weights and Measures. First Semester.
2. Elementary Algebra. Second Semester.
3. Algebra continued. First Semester.
4. Plane Geometry. Second Semester.

SCIENCE.

2½ periods a week.

1. Physiology.
2. Physical Geography.
3. Physics
4. Physics.

ENGLISH.

5 periods a week.

1. English Grammar Reviewed.
2. Grammar and Composition.
3. Rhetoric. Elements of.
4. American Literature.

LATIN.

5 periods a week.

1. A first Latin book; elements of grammar; selections read from Grad-atim or a similar book.
2. Selections from Latin reader continued; Caesar's Gallic War, second book; sight reading; writing Latin.
3. Caesar's Galic War continued, about four books read; sight reading; writing Latin.
4. Cicero's orations and letters, three orations and some letters; sight reading; writing Latin

GREEK.

5 periods a week.

1. A first Greek book; elements of grammar; selections from Xenophon's Anabasis or the New Testament; writing Greek; sight reading.
2. First book of the Anabasis; sight reading; writing Greek.

HISTORY.

2½ periods a week.

1. U. S. History.
2. Civics of the U. S. and of Montana.

FREE HAND DRAWING.

Two courses; 19 weeks, 5 hours per week.

Course 1.

Principles of free hand drawing. (A) From geometric solids. (a) In outline. (b) In washes of water color. (c) In charcoal.

(B) (a) Groups of common objects, as books, vases, chairs, tables, etc. (b) Casts of ornament (c) Interior, as corner of a room

Course 2

Design for capital, panel, etc., original design for surface, decoration in color.

Shaded study from antique figure.

MODERN LANGUAGE.

1. German. See Course 1, Collegiate Department.
2. German. See Course 2, Collegiate Department.

ADMISSION TO THE PREPARATORY.

Applicants for admission to the Preparatory Department should be at least fourteen years old, and well grounded in the elements of an English education. They must be able to pass a creditable examination in the elements of Arithmetic, Elementary, Grammar, Geography, Reading, and Spelling.

The following circular was issued concerning the Department of Music:

THE UNIVERSITY OF MONTANA.

DEPARTMENT OF MUSIC.

The Department of Music in the University of Montana will be under the direction of Miss Mary Olive Gray, graduate of the New England Conservatory of Music, Boston, Massachusetts.

Instruction may be had in piano forte, voice building, harmony, theory, and ensemble playing. For further information in regard to tuition, length of term, and rent of instruments, address, or apply in person to Miss Gray, at the University.

Registration in the Department of Music as well as in all other Departments of the University will begin Wednesday, September 11, 1895.

For information in regard to the University, its facilities courses of study, etc., address

OSCAR J. CRAIG,
President.

Missoula, Montana.

*The President and Board of Trustees,
Invite you to attend the
Opening of The University of Montana,
Missoula, September 11, 1895.
Exercises at 3.30 p. m.*

OPENING EXERCISES

OF THE

University of Montana.

MUSIC..... Mandolin, Banjo and Guitar Club

INVOCATION Rev. C. H. Lindley

MUSIC—Spinning Song—*Litolff*..... Miss Mary Olive Gray

ADDRESS Lieut. Gov. A. C. Botkin

MUSIC..... Mandolin, Banjo and Guitar Club

ADDRESS Judge Hiram Knowles

MUSIC—Sonate Pathetique, op 13—*Beethoven* . Miss Mary O. Gray

PRESIDENT'S ADDRESS Oscar J. Craig

MUSIC Mandolin, Banjo and Guitar Club

BENEDICTION.

Missoula, Mont., 3:30 p. m., Sept. 11, 1895.

The University was formally opened on September 11, 1895. The exercises were held in the assembly room and were attended by a large number of people. Many came from distant parts of the State to show their interest in the cause of education and to take part in the exercises.

The invitations issued and the programme of exercises will be found on preceding pages of this report.

EQUIPMENT OF THE UNIVERSITY.

UNIVERSITY GROUNDS.

The University Grounds comprising forty acres of excellent land are on the south side of the Missoula river just where it leaves Hell Gate canon to enter the beautiful Missoula valley. The outlook is to the west, the mountain slope being in the rear. In the foreground and to the right lying on both sides of the river is the city of Missoula, but the view extends uninterrupted for many miles down the valley. On the left is the Bitter Root valley with Mt. Lo Lo in the distance. On the right and beyond the river Mt. Jumbo and the canon of the Rattlesnake. This river affords the waterworks with an unlimited supply of water remarkable for its purity and clearness.

Arrangements have been made by citizens of Missoula, for fencing the grounds, supplying them with water and planting shade trees without expense to the State, and this will be done as early in the spring of 1896, as possible.

January 14, 1895, the citizens of school district No. 1, Missoula County voted \$3,000.00 (special tax) for the purpose of completing the south side school building, which when completed was to be tendered to the State Board of Education for the free use of the State University for a period of two years or until a University Building could be constructed.

Thereafter the School Trustees contracted for the completion of the building which contract included certain tables, cases, etc., of the estimated value of \$800.00. The total cost to the district was \$3,754.00.

The South Side building as it stood had cost a little over \$15,000 by the giving up of this building for University purpose the Board was obliged to provide other accommodations for the public schools at a cost of \$700.

BUILDINGS.

The University Building is located in South Missoula and is easy of access from all parts of the city as there are excellent sidewalks and the street car line has been extended to the University Grounds.

The building is a modern brick structure containing three stories and a basement.

The first floor contains the lecture rooms in Mathematics, Greek and Latin, Modern Languages, History and Literature, and the President's office. These lecture rooms are fitted with excellent desks and supplied with blackboards, maps, charts, and other illustrative material.

On the second floor is found the Library, Chemical Laboratory, Physical Laboratory, and Biological Laboratory. The equipment of these is given in another place.

The third floor is the Assembly room. This has a seating capacity of about 300 and is provided with rostrum, chairs, piano and individual desks enough to accommodate the present attendance of students.

The heating apparatus, lavatories and lunch rooms are in the basement. After taking the room necessary for the accommodation of these there is left a floor space of 24 ft. by 52 ft. which is being fitted up for a laboratory for shop practice in bench work in wood, wood turning, pattern making, etc. The tables for Mechanical Drawing have been placed temporarily in the lecture room of the Department of Modern languages.

THE LIBRARY.

This is a well lighted room situated on the second floor and is provided with cases for books and periodicals, and newspaper rack.

There are present in the library 817 volumes exclusive of

pamphlets and periodicals. So far the library contains but little except that material most needed for reference in the work already in progress in the University. This list for the most part includes Dictionaries, Encyclopedias, Histories, standard works in Literature, Science, Politics, Philosophy and Economics.

The following periodicals are on file:

The Forum.
The Popular Science Monthly.
Harper's Weekly.
Harper's Monthly Magazine.
The North American Review.
The Atlantic Monthly.
The Cosmopolitan.
Montana Educator.
The Scientific American.
Political Science Quarterly.
Ladies' Home Journal.
American Journal of Psychology.
The Rockies.
The Independent.
The Dial.
The Century Magazine.
Review of Reviews.
Scribner's Magazine.
The Chautauquan.

The following newspapers are on file and are for the most part donated by their respective publishers.

The Daily Missoulian, Missoula.
The Bitter Root Times, Hamilton.
The Anaconda Standard, Anaconda.
The Western News, Hamilton.
The Montanian, Thompson Falls.
The Evening Republican, Missoula.
The Troy Times, West Troy.
The Plainsman, Plains.
Montana Silverite, Missoula.
Flathead Herald-Journal, Kalispell.
The Columbian, Columbia Falls.
Helena Independent, Helena.
The Citizens Call, Philipsburg.
The Montana Mining Area.
The Darby Sentinel.

Large additions ought to be made to the library equipment

as soon as possible, or the work will be retarded for lack of proper material for the use of both Faculty and students.

DEPARTMENT OF CHEMISTRY.

One laboratory is given to this subject. Its arrangement is the usual one which obtains for work in general descriptive chemistry. There are 24 working places for students, and reagent bottles for 12 students. The department is provided with Hoskins' Assay furnace, crucible furnace No. 4 and No. 3 muffle, and the six gallon gasoline tank. Also one general analytical balance by Becker, with agate planes, and sensitive to .1 mg. Also an assay balance by the same makers sensitive to 1-50 mg. There are also other pieces of quantitative apparatus, such as burettes, pipettes and a few graduated vessels. The Dangler burners are used as the general source of heat in the Chemical Laboratory, and while they are an excellent substitute for gas, their range of usefulness however, in many directions is limited. Adjoining the Chemical Laboratory is a store room which is being used to a considerable extent as a quantitative laboratory.

The amount and variety of work called for in the department of Chemistry is more than was anticipated. The department has been called upon to do a good deal of quantitative work from the first in the way of general assaying. We have been called upon also to make some water analyses. We believe general determinations of various kinds to be a part of the legitimate work of the Chemical Department of the State University, and earnestly recommend that as soon as practicable this department be more completely equipped for the work of quantitative analysis, much of which will be called for by students in the regular work of the University before the end of the year.

DEPARTMENT OF PHYSICS.

The equipment in this department while, of course, a modest one, has been much appreciated. Besides many other pieces of apparatus with which this department is supplied, we note

especially the apparatus for the subjects of light and electricity. The University has the best projection apparatus with accessories, manufactured in America and it is not surpassed by the best European makers. This projection apparatus consists of a Stereopticon by J. B. Colt & Co., of N. Y., with microscope, polariscope and vertical attachments, also attachments for projecting the spectrum. This stereopticon can be converted, at a moment's notice into a calcium light, sunlight, or electric light apparatus. With it we are able to throw upon a screen ordinary lantern transparencies, anything which the ordinary powers of the microscope can reveal, galvanometer deflections, and other physical apparatus, and also all ordinary chemical reactions. Other accessories in our possession, such as Nichol prisms, tourmaline plates, glass tank with graduated arc, for refraction and total reflection, achromatic prisms, etc., in connection with the projection apparatus above described, enable us to demonstrate the successive steps in the development of the undulatory theory of light.

In electricity and magnetism besides many minor pieces of apparatus, the equipment in this department contains some very good testing and measuring instruments:—namely, astatic galvanometer and thermo-pile, for the detection of very slight variations in temperature. This galvanometer is wound with one coil of low, and one coil of high resistance, and as it is also differential it therefore, admits of a wide range of work in measuring resistance and electromotive force of circuits. There is also a sine and tangent galvanometer with sliding compass box, manufactured by Queen & Co. This is a standard instrument, and it is also wound with coils of high and low resistance. Also a reflecting galvanometer, with lamp and reading scale. Also we have one dead-beat and ballistic galvanometer, not affected by the proximity of masses of iron. Besides these galvanometers we have a standard Wheatstone bridge and resistance box, correct to 1.5 per cent, a standard slide-wire meter bridge, and Clark's standard cells, and also shunts for galvanometers.

Besides the above necessary testing, and measuring instruments, we are supplied with a Wheatstone bridge and resist-

ance set of simpler construction for students just beginning work in electrical measurement.

In magnetism we are supplied with large diamagnetic apparatus, dipping needle, electrometer and magnetometer, and various other smaller pieces of apparatus. For frictional electricity we are supplied with an excellent 26-inch Teopler Holtz machine.

Our equipment also includes one of E. S. Ritchie's best automatic valve air pumps. This pump has stood the test in the laboratory of the University of producing a vacuum represented by a barometric difference of only 1 millimeter. An Atwood machine for determining the laws of accelerated motion has been supplied for this department also specific balances after Jolly and Mohr.

There are 35 students now receiving instruction in Physics. The work thus far has been by study of text-book and recitations. The text-book is supplemented by laboratory work done by the student himself. The number of students in this department is much greater than was anticipated, and the laboratory conveniences are inadequate, even for the present number of students. Apparatus for physical measurements in other departments of this subject, besides electricity will be a necessity in the near future, as well as more room.

BIOLOGICAL LABORATORY.

This department has, besides the usual equipment of dissecting tables, etc., some very excellent microscopes obtained from Leitz of Wetzlar, Germany. One of these stands is the best made by these well known makers and it has the following accessories:—three eye pieces, a series of five objectives, one being a one-twelfth oil emersion. It has also a revolving stage, with substage condenser after Abbe, and the Iris diaphragm. It has eye and stage micrometers, and accessory Nichol prisms for polarization and also a camera lucida after Abbe.

Besides the above described microscope this laboratory is also provided with the large dissecting microscope after the same makers, and also two student's microscopes with rack

and pinion and micrometer adjustments, two eye pieces and three objectives each. There is also in this department a camera for photo-micrography, a complete set of staining fluids, glass slips and covers, a student's microtome after Bausch and Lomp, Anthony's copying reducing, and enlarging camera, with accessories for making lantern transparencies. For the purpose of physiology this department has been supplied with an articulated skeleton, and as we are in possession of material for mounting microscopic slides, these slides can be prepared from time to time; a few have already been added to the equipment of this department.

For purposes of illustration in Botany about five hundred botanical specimens have been contributed to this department, nearly all being representative of the flora of Montana. These specimens, however, need mounting to permit of their being more conveniently filed in botanical cases, and for this purpose mounting material is much needed. This material should be obtained from dealers who make a specialty of such articles.

Consistent with the suggestion of Supt. Hamilton of the State Board of Education, and with the recommendation of the Board application was made to the Secretary of the National Museum at Washington for duplicate specimens of minerals. Sea invertebrates, fishes and plants. Up to this time this department has received from the National Museum ninety-nine land and water invertebrates, one hundred and five fishes, both salt and fresh water specimens. The above are nearly all alcohol specimens.

Besides the above gift there was also donated by the National Museum to the museum of the University a set of ninety-eight rock and mineral specimens.

The museum is receiving almost daily additions in way of mineral specimens principally from Montana and some from other portions of the country.

It is most earnestly requested that all who are interested in the University, and especially in the preservation of valuable material for scientific work, should take special pains to contribute to this department. Time and circumstances are fatal to nearly all specimens, but being properly cared for and placed

in the museum of the University they would be preserved to the benefit of the coming generations.

THE COBBAN COLLECTION.

In connection with this department should be noted also the very fine mineral collection of Mr. Robert M. Cobban which this gentleman has kindly placed in the museum for the use of the University.

This collection is a very valuable one especially in the matter of the variety of representative minerals which it contains, and will be of great service to the University in Mineralogy.

MOUNTED SPECIMENS.

The University is also indebted to Mr. Charles Emsley of Missoula, for the beginning of a collection of mounted specimens.

DEPARTMENT OF APPLIED SCIENCE.

COURSE OF STUDY AND EQUIPMENT.

Students upon entrance into the Freshman class in the course of Applied Science are required to pass an examination in:

Mathematics as laid out in Courses 1, 2, 3 and 4.

English as laid out in Courses 1, 2, 3 and 4.

History as laid out in Courses 1 and 2.

Drawing as laid out in Courses 1 and 2.

This department has for its object the giving of a good general education making a specialty of those technical branches belonging to Engineering, also to furnish a systematic and progressive education in the use of tools, machinery and materials, combined with as much theoretical instruction as will furnish a thorough knowledge of the principle involved. For those students not having a sufficient preparation, the preparatory course is provided as shown in the above schedule.

DRAWING.

The course in drawing commences in the Preparatory year and continues throughout the college course. Instruction in Free Hand Drawing is given in the Preparatory year. It includes drawing from copy and model perspective drawing from objects and free hand sketches of machinery. These sketches will be used for instrumental drawing later in the course. The work in the Freshman and Sophomore years consists of drawing from copies and models and practice in drawing sections of various parts of machines such as screw-threads, etc.

In the junior year drawings for use in the pattern shop will be required; consisting of free hand sketches of machinery, which will be drawn to scale in the drawing room making a full working drawing that can be used in the shops.

In the Senior year the work required will be the designing of engines and machinery, the students original idea in the building of special machinery will then be brought out. Lettering symbolic hatching, line shading, tinting, tracing and blue printing receives attention during the course.

There have been provided for the use of students in Mechanical Drawing, six drawing tables. These accommodate two students each, and each contain four drawers provided with lock and key so that the student can leave his drawing materials in the table. Each table holds two drawing boards 36x25 inches.

SHOP WORK.

Shop practice begins in the second term of the Freshman year. During the first term lectures in wood working machinery are given. Goss, Bench Work in Wood is used as a text to familiarize the student with the uses and the care of carpenter's tools. During the second semester the knowledge thus gained is put to practice in the wood working shop.

The course in the Wood Shop will consist of exercises, such as sawing, planing, joining, splicing, mortising, dove-tailing, framing and paneling. All the operations of carpentry are thus taught. These exercises are followed by those in turning,

the course as laid out will begin in the 1st semester of the Sophomore year, and will consist of exercises in turning of wood, such as cylinders, beads, cups to a given size. Exercises which involve the use of chucks and face plates. When the student has completed this course in turning, he will take up pattern making, molding and casting, the drawings for this having been made in the drawing room by the students. Lectures in pattern making, moulding and casting will be given during the 2d semester of the Freshman year. The 2d semester of the Sophomore will be taken up in bench work or vise work in iron such as filing, chipping, key fitting, etc., both in iron and steel; after these exercises machine work will be taken up such as turning screw threads of certain pitch, turning cylinders boring, planing and the common exercises in this line of work. Students will be required to forge their own tools, grind them and keep them in good order. The work in iron and steel will not be given this year as the shops for this work will not be in readiness during this college year.

RECITATIONS.

During the Freshman year the purely technical work which will be given besides their required work will be:

Lectures in Bench Work in Wood.

Lectures in pattern making, moulding and casting.

In Sophomore year: Heat (Garnet's.)

Steam boilers (Text: Wilson and Flather.)

In Junior year: "Valves and Links."

Graphical Statics.

Transmission of Power

In the Senior year: Elements of Mechanics.

Strength of Material.

Students in the Applied Science course are required to take the full course in Mathematics consisting of Plane and Solid Geometry, Plane and Spherical Trigonometry, Higher Algebra, Analytical Geometry, Descriptive Geometry, Differential and Integral Calculus.

WOOD SHOP.

A part of the basement of the University building will be used for this purpose. It is well lighted and ventilated and

contains 24 ft. by 52 ft. of floor space. It affords room for eight benches arranged for two students to work at each bench. Each bench will be supplied with two sets of tools.

Each set of tools contain:

- (1) 6" square, try and mitre combined.
- (1) 8" bevel, (sliding.)
- (2) 8" marking gauges.
- (1) Scriber.
- Firmer chisels (8 in the set.)
- Gauges (4 in the set.)
- (1) 22" cross-cutting saw.
- (1) 24" ripping saw.
- (1) 8" drawing knife.
- (1) Fore plane.
- (1) Jack plane.
- (1) Smooth plane.
- (1) Set of auger bits.
- (1) Bit brace.
- (1) Set of brad awls.
- (1) Carpenters hammer.
- (1) Mallet.
- (1) Nail set.

These are kept in lockers, each student having one set which he is too care for and use. Besides these the shop contains the following tools which are for general use.

- 1 Framing square.
- 1 Beading plane.
- 1 Mitre box.
- 1 Matching plane.
- 1 Wood plow.
- 1 Grindstone and several oil stones.

Every available inch of space in the University building being already in use, Messrs. Northquist and Jackson of the Missoula Iron Works, tendered to the University the use of their Foundry and Machine works for instructional purposes.

Having the use of their excellent equipment of machinery and other necessary appliances the department will at once be able to put in operation its entire course of work including the molding, the casting and the machine work in iron and steel.

ATTENDANCE.

The total number of students matriculated is 118. The following table shows the subjects in which instruction has been given and the number of students studying each subject.

Number in Chemistry classes.....	7
“ “ Physics “	35
“ “ Physiology “	40
“ “ Latin “	87
“ “ Greek “	3
“ “ German “	14
“ “ French “	19
“ “ Mechanical Drawing.....	9
“ “ Wood Work.....	9
“ “ Shop Practice.....	9
“ “ Geometry classes.....	8
“ “ Algebra “	43
“ “ Arithmetic “	46
“ “ History “	59
“ “ Rhetoric and Literature.....	37
“ “ English Grammar and Composition..	50
“ “ Music	11

STATE AGRICULTURAL COLLEGE.

REPORT OF THE EXECUTIVE BOARD.

BOZEMAN, MONTANA, November 30, 1895.

THE HONORABLE STATE BOARD OF EDUCATION,

HELENA, MONTANA.

Gentlemen:—The accompanying report of the President of the Agricultural College will set forth to you in detail the work being done, and it is needless for us to add anything to it.

As the printed report of the Experiment Station setting forth in detail the work of its staff during the past year will be in the hands of the members of your Board within a few days, we have thought it useless to consume your time with extensive reports now.

The experimental work of the Agriculturalist has been mostly along the lines of direct interest to the farmer; comparative tests of small grains and potatoes by growing a large number of varieties in plats fall-seeding at different periods, pig-feeding, the study of smut, etc.

The principal work of the chemist has been in the analysis of soils from different parts of the State, experiments on the effect of taling-water from silver mines on vegetation and analysis of different varieties of potatoes.

The Veterinarian has devoted most of his time to the study of sheep disease, especially the parasitic *Ictero-Haematurica* of sheép.

We believe good work is being done in all the departments, and the relations between the Executive Board and the College faculty and Station staff have been uniformly pleasant and cordial.

We enclose the statements of the treasurer for the last six months. The small State appropriation has been a very material help to us as it has enabled us without difficulty to pay for those expense items for which the federal appropriation is not available. These expenses will naturally grow materially when we get into our new buildings, and an increased appropriation will then be imperatively needed.

By order of the Executive Board,
PETER KOCH,
 Secretary.

PETER KOCH, TREAS., in account with Agri. College, Nov. 30.

1895					
May 31	To cash on hand	\$17,365 43	Nov. 30	By Salaries	\$10,952 83
Nov. 30	" " Fed. App. Coll.	21,000 00		" Library	460 38
	" " " " Ex. St.	7,500 00		" Sci. App. and Chem.	1,673 35
	" " State Approp.	2,414 20		" Implem. and Hdwe.	307 09
	" " College Fees.	1,307 10		" Labor	2,175 89
	" " Sale of Produce ..	664 64		" Live Stock.	400 75
				" Water.	75 50
				" Bulletins and Staty.	298 50
				" R. R. Freight and Exp.	108 89
				" Ex. St. Buildings	663 25
				" Sup., Plants, etc.	285 92
				" Sundries	222 64
				" St. Appr. Vouchers	969 47
				Balance	31,656 85
		\$50,251 37			\$50,251 39
Nov. 30	To Bal. on hand.....	\$31,656 85			

PETER KOCH, TREAS. in account with Bond Fund, Montana Agricultural College, November 30.

1895					
Oct. 24	To cash rec'd from State Treasurer.	\$29,200 27	Nov. 30	By Voucher No. 1.....	\$129 00
				" No. 2.....	25 08
				" No. 3.....	27 50
				" No. 4.....	55 45
				" No. 5.....	201 00
				" No. 6.....	8 70
				" No. 7.....	8 00
				" No. 8.....	23 00
				" No. 9.....	24 00
				" No. 10.....	7 50
				" No. 11.....	3 35
				" No. 12.....	6 60
				" No. 13.....	5 00
				" No. 14.....	13 70
				" No. 15.....	175 00
				" No. 16.....	11 45
				" No. 17.....	16 65
				Balance	28,458 99
		\$29,200 27			\$29,200 27
Nov. 30	To Bal. on hand.....	28,458 99			

PRESIDENT'S REPORT.

BOZEMAN, MONTANA, November 30, 1895.

TO THE EXECUTIVE BOARD,

Gentlemen:—I have the honor to present the semi-annual report of the College of Agriculture and Mechanic Arts.

Since my last report several important changes have been made. On account of the large number of students in the preparatory course it was necessary to give an assistant to the principal of that department. For this purpose Miss M. A. Cantwell, the principal of the Bozeman High School, was engaged and is giving valuable service. Miss Jennie Jones was engaged as assistant in the commercial department, and takes charge of the classes in stenography and type-writing, giving her spare time to the library. Her services in both these capacities have been efficient and satisfactory. Very important changes have also been made in our courses of study. It was strongly felt that the preparatory work was not at all sufficient for students whose training had been in ungraded district schools and whose minds were more or less undisciplined. To remedy this another year was added to the preparatory course, and elementary science has been introduced in the second year. This will avoid the evil which is prevalent in the majority of our colleges and universities, viz: of permitting students to enter college courses without any knowledge of the rudiments of the sciences. While some students may find the course too long and can not remain for graduation, yet it remains true that the foundations of an education well laid is more likely to encourage a student to go on and graduate than when the groundwork is very imperfectly done.

In addition to this it should ever be kept in mind that the goal in education is the proper development of the faculties, and that it is not graduation. As far as our facilities permit the work in the preparatory course is made practical, the ob-

ject being to teach the student to apply his knowledge in whatever position he may occupy in life, hence laboratory work is introduced in physics, chemistry, botany and physiology. Through means of experiment the aim is to develop and improve their powers of observation.

The success thus far attained is such as to strengthen our belief in the importance of the experimental method in teaching the elements of science in a preparatory course. In the majority of cases the work is a preparation for life and not for college, hence all students should if possible derive the benefit. A student who has no knowledge of the elements of science is not at the present time prepared either for the work of life or for a college course.

It was intended that these institutions should be to a certain extent industrial or manual training schools. So far as conditions permit this idea is kept in view in the various departments.

Miss Cantwell, in addition to her other duties, has taken charge of a class in domestic economy. The work consists of plain sewing and general housekeeping. Owing to lack of room the work in this department is preliminary and incomplete.

THE ART DEPARTMENT.

The work consists of drawing from the cast and from objects, in charcoal, crayon, pencil and India inks. During the present year a large number of casts have been added, also important additions in equipment have been made. There is also a class in oil and water-color. A very important feature of the work is the lectures on the sculpture of the best periods, on the great world pictures and the general principles underlying all art.

DEPARTMENT OF AGRICULTURE AND BOTANY.

In addition to the regular recitation period in botany, two extra periods are given to laboratory work. Much time is spent in collecting materials and preparing them for microscopic examination. The equipment is increased in proportion to the number of students and consists of eight microscopes

with attachments, apparatus for the preparing of specimens, and herbarium to which additions are constantly being made, and an excellent department library. A course of lectures has been given on "The Principles of Animal Feeding," comprising of the following subjects:

The Composition of Animal Bodies as compared with the composition of foods; The importance of fall feeding and early maturity; how to feed young animals; economic rations for beef production from Montana foods; silos, ensilage and soiling; the selection and feeding of dairy cows, and the German feeding standards.

MECHANICAL ENGINEERING DEPARTMENT.

A course of lectures on steam boilers, etc., has been delivered, the shop plant being used for practical illustration. In mathematics instruction has been given in higher algebra, plane and spherical trigonometry, and calculus.

SHOP WORK.

The course in carpentry and wood-turning has been augmented by the introduction of several new exercises and a thorough course in metal work has been started, comprising turning, planing, drilling and fitting. The interest shown by the students in this department is very gratifying.

CIVIL ENGINEERING.

Instruction has been given by the head of the department in geometry, and civil engineering. Experiments have been carried on with brick and cements. Additions have been made to the equipment of this department. Considerable work has been done in preparing plans for the new buildings and in connection with the excavation work for the various buildings.

COMMERCIAL DEPARTMENT.

The Ellis system of Actual business which was adopted by this department has proved very satisfactory. The increased interest is shown by the regular attendance and punctuality of students. All students are required to write all kinds of

commercial paper and the more important legal documents, and to examine and correct those written by other students. The department suffers from lack of room as the large room occupied last year had to be given up to the public school. The attendance in this department has decreased somewhat on account of more rigid requirements for entrance. The classes in stenography and typewriting are also doing satisfactory work.

Students entering the department are examined in arithmetic, English grammar and composition, and unless they show proficiency are either conditioned in these subjects or excluded until prepared.

ENGLISH AND LATIN.

Throughout all the courses the importance of good English is emphasized, excepting the senior year of the college courses. Latin or Etymology is required so that every student is expected to understand word-building as an aid to the nomenclature of the sciences.

Liberal courses are given in economics constitutional history and literature, both English and American, anatomy, zoology, geology, ethics, psychology, logic, and a variety of agricultural subjects.

A short course in Agricultural and the English branches has been offered this year for the benefit of farmers and others who can not afford the time and expense required for the longer course.

THE COLLEGE AND DEPARTMENT LIBRARIES.

A large number of volumes have been added to the library in science, literature and history. Among these are the Riverside editions of Thoreau, Hawthorne, Whittier; also editions of Dickens, Scott, Fennimore Cooper, etc.

The reading room is well supplied with journals, magazines and periodicals. Our thanks are due the publishers of the leading dailies and weeklies of the State who very kindly donate their papers to the College.

Up to the present time 151 students have been enrolled of which 26 are in first year preparatory, 27 in second year preparatory, 2 in Agricultural courses, 8 in Ladies' course, 21 in Commercial course, 6 in Applied Science,, 26 in Special courses 33 in Piano and Violin, and 2 in Arts. Those in Piano, Violin and Art are specials in these subjects.

Respectfully submitted,

JAMES REID,

President.

